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# PRELIMINARY REPORT ON THE FRENCH CHEMICAL INDUSTRY'S MISSION TO THE U.S.S.R.



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# PRELIMINARY REPORT ON THE FRENCH CHEMICAL INDUSTRY'S MISSION TO THE U.S.S.R. (18 October 1959 - 8 November 1959)

## FIRST PART

/Following is a translation of an article in the French-language periodical "Revue de l'Institut Francais du Petrole et Annales des Combustibles Liquides", Vol. 15, No. 1, Paris 1960./

Called preliminary, the present report follows up the study trip that a French mission made in the USSR from 18 October to 8 November 1959. The mission's members were Messrs. Echard, the Minister for Industry, Engel of the Saint-Gobain Company, Godard of the Chemical Industries Association, Lagche of the Kuhlmann Corporation, LaRue of the d'Ugine Corporation, Maincon of the Rhone-Poulenc Corporation.

This preliminary report is not complete. It particularly does not contain any technical description of the facilities visited. It will be completed as soon as possible by a technical report.

Over three weeks, the Mission visited the following plants and foundations:

| PLANT OR FOUNDATION | ACTIVITIES VISITED | LOCATION |
|---|---|---|
| Karatsharov Plant | Processing of polystyrene and phenolic and amino resins. | Moscow suburbs |
| Kuskov Plant | Formaldehyde, polyvinyl acetal, plasticizers(dibutylphtalate,-sebacate, and-adipate), styrene polymerization, polystyrene film and filaments. | Moscow suburbs |
| Komsomolskaya Pravda Plant | Processing of polystyrene and phenolic and amino resins. | Leningrad |
| Polyvinyl Acetate Plant | Monemeric vinyl acetate, polyvinyl acetate, polyvinyl acetals (among them, butyral). | Erivan (Armenia) |
| Lissitshansk Plant | Ammoniac, methanol, isobutylineoils, nitric acid, nitrate and bicarbonate of ammonia. | Lissitshansk (SeveroDonetz) NW of Donetz Basin on Donetz R. |
| Voronej Plant | Synthetic rubber of the butadiene-styrene type, dehydrogenation of ethylbenzene into styrene, butadiene production from ethyl alcohol base. | Voronej (S of Moscow) |
| Vladimir Plant | Polyvinyl chloride processing, acetic anhydride and acetic acid, cellulose acetate, formaldehyde-urea foams. | Vladimir (E of Moscow) |
| Russian Thermoplastics Foundation | Plastics research. | Leningrad |

(Continued)

| PLANT OR FOUNDATION | ACTIVITIES VISITED | LOCATION |
|---|---|---|
| G.I.A.P. | Research on nitrogen derivatives. | Lissitshansk |
| Russian Plastics Foundation (under construction) | Plastics research. | Vladimir |

BACKGROUND INFORMATION

In 1957 a number of managerial reforms were carried out in the U.S.S.R. The application of these reforms is still under way in certain cases, so much so that the Soviet economy appears to be in a state of perpetual evolution. Consequently, when the information provided is vague, this is fairly often a result of the provisional character of a given institution or system destined, as it may be, to be modified or, sooner or later, to disappear.

Nebulous answers do not necessarily reveal determination not to respond but may rather show the difficulty of grasping facts in flux.

However, several things are definite:

1. Most of the technical ministries have been abolished and all of their entrepreneurial authority turned over to Gosplan. Hence the need to discuss Gosplan first.

2. Along with the concentration within Gosplan of entrepreneurial authority, a major effort was made to decentralize executive authority by establishing Sovnarkhoses, whose job is to manage industrial enterprises from their own geographic areas.

3. Therefore, in order to make it as easy as possible to follow this report, it seems worth the trouble to describe first, and more or less quickly as the case may be, the political and economic institutions of Soviet society that will crop up during the course of this account. These institutions are:

Gosplan
The State Committee for the Chemical Industry
The Sovnarkhoses
The Unions
The Research and Technical Foundations
The Plants

PART ONE. THE INSTITUTIONS

1. Gosplan

This is the organism responsible for detailed planning, which means all steps taken to ensure coordination among the various mechanisms of the planned economy. Its personnel number 75,000 and are distributed between the main Gosplan and the Gosplans of the (Soviet) Republics.

Gosplan

prepares the seven-year plan.
prepares each year's plan for production and investment.
establishes basic levels for the Soviet economy, i.e., prices, wages, and investments.

Later, each of these factors will be studied separately.

2. The State Committee for the Chemical Industry

This is the only centrally planned operation to remain in being after the State Ministry for Chemistry disappeared in 1956-1957.

The State Committee:

a. Gives technical polish and precision to the seven-year

plan's outlook for the chemical industry. On the other hand, the State Committee is apparently not involved in the yearly production plans.

b. Makes technical studies concerning the distribution and location of plant or production facilities in the various Republics and selects the technology to be used, Russian or foreign, for example.

c. Directs the research and technological foundations.

d. Does not administer plants, which are under the auspices of the Sovnarkhoses. The State Committee has no regional cadres in the Republics.

The State Committee's activities include the following areas:

INORGANIC CHEMISTRY

Mineral extraction and processing--
Sodium sulphate on the shores of the Caspian--
Rock salt but not common salt, which comes under the food industries--
Crude natural phosphates of the Kola type--
Crude potassium salts--
Lime for use in chemistry--
Sulphur, but not pyrites

Inorganic acids, sulphuric, phosphoric etc.
Nitrogen, phosphate, and potash fertilizers.
Sodium carbonate industry, sodas, chlorine.

ORGANIC CHEMISTRY

Intermediates and organic dyes.
Organic chlorine derivatives.
Synthetic alcohol.
Synthetic rubber.
Plastics manufacture and processing.

APPLIED CHEMISTRY

Paints and varnishes.
Chemical reagents.
Insecticides and fungicides.
Detergents.
Auxiliary textile products.
Tires and rubber and asbestos articles.
Artificial and synthetic fibers.

The Ministry of Health controls processed pharmaceutical products and the Ministry of Culture photographic materials.

Where materials have a petrochemical base, the State Committee seems to control the end-product while the department, or ministry, or

committee (?) for petroleum products should have cognizance over the basic material. Despite repeated questioning about actual situations and actual products, we could not get much clarification of the assignment of responsibilities in this area.

Still a part of the coke industry, tars and benzenes should quickly pass into the jurisdiction of the State Committee.

3. The Sovnarkhoses

These are industrial and economic services for the Republics, with territorial jurisdiction the same as that of the economic and administrative region in which they are located. They are dependencies of the Council of Ministers of their own Republics or, eventually, of the heads of autonomous regions or national districts. Thus, where chemistry is concerned, the Sovnarkhoses do not work under the State Committee, nor do they come under the main Gosplan or those of the Republics.

The Sovnarkhoses have wide powers. They:

a. Perform the day-to-day tasks of management and supervision of the industries in their districts.
b. Carry out local planning in terms of the overall plan.
c. Select various personnel, including plant directors.
d. Can make local reforms in structure by specializing, merging, or abolishing various local activities.

But the Sovnarkhoses do not control the essential economic levers -- prices, wages, and investments. These remain under the jurisdiction of Gosplan.

The internal structure of the Sovnarkhoses depends on the actual or future ramification of industry in their jurisdiction. This is why some Sovnarkhoses might not have a chemical section, for example. Conversely, when an economic region has a very important plant, the corresponding Sovnarkhose service can come and set itself up right next door, as, for example, with the chemical section of the Longanskon-Voroshilovgrad Sovnarkhose at Lissitshansk.

4. The Unions

Workmen's union organization is based on the kind of industry. For the chemical industry there is one Union of Chemical and Petroleum Industries Personnel, just as there is one Mine Workers' Union, one Metallurgical Workers' Union etc.

There is only one union organization for any given plant. Everyone in the plant belongs to that union, no matter whether he is actually in the occupational field that goes to make up the union as a whole.

At the top, all the unions of occupational specialties make up one single union, with the Central Council as its executive agency.

The plant locals deal with all the problems arising from plant social and cultural activity, i.e., wages, social security, housing, and cultural matters. While workers are free to join or not to join the plant local, average membership is in fact greater than 90 per cent.

5. The Research and Technical Foundations

Research foundations in the U.S.S.R. seem to be placed on several different levels. There are:

a. The foundations, stemming from the academies of science, which do basic chemical research. Those of chemical interest that can be named are the Karpov Foundation for Physical Chemistry, the foundation for organic compounds in Moscow, and the Foundation for Macromolecular Chemistry, none of which the French Mission visited.

b. The chemical-research and technological foundations stemming from the State Committee for the Chemical Industry. Of the second group those visited were:

The Foundation for Thermoplastics Research in Leningrad
The Lissitshansk(Donetz Basin) Branch of the G.I.A.P. (Nitrogen Research Foundation)
The Vladimir Foundation for Plastics Research (under construction)

It appears that the Lebedev Foundation for synthetic rubber research also stems from the State Committee.

The Mission studied the role of the foundations as carefully as it could and, by means of information provided both by the State Committee and the directors of plants visited, succeeded in understanding the part the foundations play in making up the overall plan.

c. The research foundations stemming from the Sovnarkhoses.

These foundations are organizationally independent of the State Committee. Nonetheless, the State Committee is kept informed of the research they do and can intervene in their work to insure program coordination.

Actually, there do not seem to be many foundations of this type yet, but they could make strides under the terms of the decentralizing policy pursued since 1957. The Mission visited none of these foundations.

In conclusion we should point out that the plants can have research laboratories of their own, for which financing is guaranteed by credits which the Sovnarkhoses can establish for plants.

During our visits, the State Committee's foundation directors explained the role of their organizarions.

(1) Subordination to the State Committee assures coordination of the research projects that the research and technological foundations undertake. As a result, the State Committee directs 26 foundations with a total personnel of something under 50,000.

(2) In almost every case these foundations seem to have 2 sections. One is for applied research, usually with laboratories and pilot plants at its disposal. The other is called technological and has 2 main responsibilities. The first is to work out the preliminary plans required by the Sovnarkhoses to achieve the general objectives of the seven-year plan. The second is to do the engineering work that plants require to meet the various production goals set for them by the overall plan, this in accordance with a general system that will be explained later.

## SUMMARY OF THE VARIOUS FOUNDATIONS VISITED

1) Thermoplastics Research Foundation in Leningrad:
Research in the fields of polyvinyl acetate, polystyrene, polyolefins, fluorinated polyolefins, and polyesters.
Research section personnel: 700 Pilot plant and technical: 700 to 800
Total: 1500 to 1600
Of the 700 persons attached to research, 350 are graduated and 200 are lab assistants.

2) Lissitshansk (SeveroDonetz) Branch of the G.I.A.P.

This branch is under the main G.I.A.P. in Moscow, which itself comes under the Nitrogen Committee, a sub-committee of the State Committee for the Chemical Industry. So far, G.I.A.P.'s activity has been limited to nitrogen derivatives; but in the future it will also take up certain aspects of organic chemistry. In this respect, one may surmise that these new interests will hinge upon processes to be set up in plants that have branches near by. G.I.A.P. now has 5 branches.

The current seven-year plan calls for an increase in personnel at the Lissitshansk Branch from the present 700 to 1500.

The research section has between 300 and 350 people; the technical section 400. Of these, 300 are engineers and 50 technicians.

Acting as their own draftsman, the engineers do the roughs on a project and then the technicians do the detail (25 people in the drafting room).

The technical section is divided up into special sections. Each special section is itself separated into work groups which include engineers and an engineer leading the group. Each work group takes up one particular aspect of the project, and the section leader gives central direction to the work of the groups.

A technical group checks to make certain of the division of the work, since it is the point of arrival and departure of every project.

3) Lissitshansk also has an automation-research foundation. Its special field of study is automatic regulation of units in the complex. Apparently under particular investigation is the completely automatic operation of ammonia units under maximum yield conditions.

4) The Voronej Branch of Leningrad's Lebedev Foundation for research on synthetic rubber was not visited.

(NOTE: For more complete information on USSR Patents, see document 450/174 of September 30, 1959 issued by the Commission for International Protection of Industrial Property by means of Trade Marks and Patents in the USSR.)

Our visits to the State Committee and to the foundations permitted discussion of the domestic and foreign aspects of the U.S.S.R. patent situation. In the U.S.S.R. a legal document called an "originator's certificate" does in fact exist. It specifies the discoveries, inventions, or innovations that an inventor or team of inventors has made.

All originator's certificates are the property of the state, which, inside the U.S.S.R., enjoys every right usually conferred by patent, including the right to allow all its plants to exploit new material.

Originator's certificates have their own regular periodical.

Inventors receive a bonus calculated according to the economic value of their patents. "Economic value" means the savings that an invention can effect in production. The bonus amounts to several percentage points of these savings. Once the certificate is registered, the inventor or inventors touch 25 per cent of the bonus and get the rest after their invention has been worked out and in operation for a year. The savings on which the bonus is based are calculated for an operating period of 5 years.

This method of calculating bonuses may be legitimate for improvements but seems impossible to apply to basic discoveries. To this the reply was that the bonus for an important discovery might be even greater.

A state committee awards bonuses for inventions upon examination of the savings estimated by the plants. Bonuses up to 10,000 rubles are exempt from income tax.

Aside from bonuses, major inventors can press for a Lenin prize. Awarded once a year to a small number of top scientists and inventors, this prize is heavily endowed, so that firsts can go as high as 100,000 income tax-free rubles.

## COMMENT ON RESEARCH

On the basis of a few rapid visits to technical foundations separate from the academies of science, it is rather difficult to assess chemical research in the U.S.S.R. Everywhere we went we did notice considerable progress in the construction of new research facilities. This material effort is on a par with that made to improve the remuneration of research personnel, to be taken up later in the chapter entitled: Wages and Work Schedules.

In the plastics field, Russian researchers demonstrated several laboratory or semi-industrial accomplishments that interested qualified members of the Mission. The samples provided are now under study.

The Plants

As units of production, the plants have accounts with the state bank (Gosbank) and so, by their comparative financial independence, are set off from other production units.

Each plant has its director, who is assisted on one hand by the various service-department heads and on the other by several committees, i.e., the union, production, and youth committees. In a separate category are the special committees set up to deal with special problems as they arise, expansion, for example. (cf. Plan)

## MANAGEMENT

After the plant director comes the chief engineer, who is

more closely responsible for general management and for social and administrative matters.

While their composition varies with the size of the plant, in general the following are the different services provided by management.

Technical manufacture section(technical services)
Mechanical section(maintenance)
Plans section
Work-norms and wages section(blue & white collar employees for plant and office staffs)
Managerial personnel
Finance
Legal
Central bookkeeping
Commercial(shipping)
Supply(receiving)
Stockrooms
Building project

## THE COMMITTEES

1. The Union Committee

Each plant has a union committee that is elected once a year. Although every shop in the plant forms a union section that chooses a group leader, all the workers vote for union committee members by secret ballot. Ranging from 9 to 15, the number of committee members depends on the number of plant personnel.

Theoretically, committee members still do their regular jobs in the plant. However, if union membership is between 500 and 700, the committee has the right to one person, paid by the plant, exclusively for union work. This is usually the union committee secretary. And if union membership is above something between 1500 and 2000 persons, the union has the right to hire an outside person and to pay him from union funds. Committee members apportion among themselves the work in the various social and cultural areas for which they are qualified: wages, social security, plant security, housing, and cultural matters. Similarly, one member deals with production matters, apparently to justify his election to the production committee.

2. The Production Committee

Dealing with all production matters, the production committee is elected by all the plant workers, whether union members or not. Elections by secret ballot are held once a year, with the number (5 to 9) of committee members depending on the size of the plant. Ordinarily, the Party, the Union committee, and the young communists (Komsomols) send their elected representatives to the production committee. It meets at least twice a year and is an advisory body that must be consulted on plant production problems. Similarly, the committee can take up any problem with management. If the plant director and the

committee disagree, their differences are referred to the district (Sovnarkhoses) and to the Party's district committee.

3. The remaining plant committees are those of the communist youth (Komsomols) and of the Party.

## GENERAL COMMENT

Made at the time the plants were visited, the following are the observations of a general nature:

1. Most of the plants the Mission visited looked worn and neglected from the outside. Paint is particularly lacking, and when it is used, the effect is slap-dash. However, upkeep is excellent inside workspaces.

Neglect of the outside stems from a deliberate policy of applying the costs of external maintenance to the upkeep of machines and equipment, the real means of production.

2. In many of the plants we visited, a part of the equipment appears to be German war reparations. This was the case at Lissitshansk with the ammoniac and methanol compressors and synthesizing machines; in Voronej with the GRS type of synthetic rubber polymerizing and coagulating equipment.

3. The plants visited employ a very large proportion of women, an average of more than 50 per cent.

Women are found everywhere, in the most responsible positions as well as in the most physically taxing, except when the latter are forbidden them.

The Mission questioned quite a few women, especially those who were heads of manufacturing departments or supervisors of production flow. Nearly all the women questioned, and particularly those of higher rank, had outstanding technical qualifications, certainly equivalent to those of their exact male counterparts in the system. If there is no distinction made between men and women in pay, there is likewise none between them in technical capacity.

4. In a certain number of plants, and above all in the major ones (Lissitshansk and Voronej), there seem to be great numbers of employees.

Some 4,972 people work in the Lissitshansk Plant, which in 1958 produced goods worth 372 million rubles, or 18,600 million (light) francs. Leaving out the 663 people engaged in side-line activities, i.e., gardening, housing, and nursery schools, there remain 4,309 so-called production personnel. This figure of course includes about 2,900 in the general service departments and 1400 in manufacturing. The 2900 figure does not include the investments staff.

The total may seem high. Still, it should be noted that Lissitshansk is in the midst of an expansion program that is slated to quadruple production by 1965. Furthermore, the plant is installing new production units for processing acetylene from natural gas, acetic anhydride from acid, and for acetaldehyde. These installations require a large work-force.

5. Automation

In various manufacturing areas, several plants have tested or have definitively adopted equipment automation. The problems posed by automation all seem to have been solved with great resourcefulness in the Leningrad, Voronej, and Vladimir installations that we visited. Their methods of working out and setting up automation seem in any case to bear comparison to foreign installations, although the Mission saw no control rooms like those found in the modern petrochemical plants.

In different plants work groups have vigorously attacked the problem of automation, which in the years ahead may bring major gains in productivity. The Mission was not allowed to overlook the fact that, because of Soviet policy on work-norms, workers have nothing to fear from automation but ask for it of their own volition.



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